

CLAIMS

I claim:

1. A method, comprising:

applying thermally conductive material to a first side of a structural layer, the structural layer having a connection pad on the first side of the structural layer, a via extending from the first side to a second side of the structural layer, and a conductive trace between the via and the connection pad on the first side of the layer, the thermally conductive material being applied to be in contact with at least one of the via and the conductive trace;

connecting a first component to the connection pad; and

heating a second side of the structural layer after connecting the first component to the connection pad.

2. The method of claim 1, wherein:

the connection pad comprises a ball grid array pad; and

the first component is connected to the ball grid array pad with solder.

3. The method of claim 2, further comprising applying solder paste to the ball grid array pad before applying the thermally conductive material to the first side of a structural layer.

4. The method of claim 2, wherein heating the second side of the structural layer comprises at least part of a wave solder process that connects a second component to the structural layer.

5. The method of claim 1, wherein the thermally conductive material comprises a thermal epoxy.
6. The method of claim 5, wherein applying the thermally conductive material comprises at least one of using a syringe to apply the thermally conductive material and using a stencil to apply the thermally conductive material.
7. The method of claim 1, wherein the thermally conductive material is not removed from the structural layer.
8. A device, comprising:
 - a layer having a first side with a connection pad, a via extending from the first side to a second side, and a trace between the via and the connection pad;
 - a first component connected to the connection pad;
 - a second component connected to the second side of the structural layer; and
 - a layer of thermally conductive material on at least part of the first side of the structural layer, wherein the thermally conductive material is in contact with the via and extends beyond the via.
9. The device of claim 8, wherein:
 - the connection pad comprises a ball grid array pad;
 - the first component is connected to the ball grid array pad with a solder ball; and
 - the second component is connected to the second side of the structural layer with solder.
10. The device of claim 8, wherein the thermally conductive material comprises a thermal epoxy.

11. The device of claim 8, wherein the thermally conductive material is at least partially located between the first side of the layer and the first component.
12. The device of claim 11, wherein the thermally conductive material is in contact with both the first side of the layer and the first component.
13. The device of claim 12, wherein the layer comprises a printed circuit board, and the first component comprises a ball grid array device.
14. The device of claim 8, wherein the layer comprises a printed circuit board.
15. The device of claim 14, further comprising:
 - a microprocessor connected to the printed circuit board; and
 - memory connected to the printed circuit board.
16. A method, comprising:
 - applying thermally conductive material to a first side of a layer, the layer having a connection pad on the first side of the layer, a via extending from the first side to a second side of the layer, and a conductive trace between the via and the connection pad on the first side of the layer, the thermally conductive material being applied to be in contact with at least one of the via and the conductive trace;
 - connecting a first component to the connection pad with a first connection material having a melting point; and
 - connecting, after connecting the first component, a second component to a second side of the layer after connecting the first component to the connection pad, wherein the second component is connected to the

second side with a second connection material raised to a temperature at least as high as the melting point of the first connection material.

17. The method of claim 16, wherein:

the connection pad comprises a ball grid array pad; and

the first connection material comprises solder.

18. The method of claim 17, further comprising applying solder paste to the ball grid array pad before applying the thermally conductive material to the first side of a structural layer.

19. The method of claim 17, wherein the second component is connected to the second side of the structural layer by a wave solder process.

20. The method of claim 16, wherein the thermally conductive material comprises a thermal epoxy.